UPGRADING OF SHORT CONTACT TIME SOLVENT REFINED COAL. R. H. Heck, T. O. Mitchell, T. R. Stein and M. J. Dabkowski. Mobil Research and Development Corporation, Central Research Division, P. O. Box 1025, Princeton, New Jersey 08540.

In the production of Solvent Refined Coal for use as a solid low sulfur boiler fuel, the residence time of the coal in the dissolver is dictated by the desired sulfur content of the SRC product. The coal can, in fact, be liquified at significantly shorter dissolver residence times. This short contact time (SCT) operation results in significantly lower gas make and hydrogen consumption for the SRC process.

SRC from the SCT operation contains more sulfur and oxygen than conventional SRC from the same coal. It also contains a much higher fraction of high molecular weight, highly polar asphaltenic molecules. Both thermal and catalytic upgrading of SCT-SRC were investigated. Thermal treatment reduces the molecular weight, functionality and heteroatom content, but is accompanied by excessive gas make and a decrease in product hydorgen content. However, catalytic hydroprocessing results in a significantly higher quality liquid product with a minimum of light gas production.

The use of a SCT-SRC process coupled with hydroprocessing of the SRC product provides an efficient route for producing high yields of high quality liquid fuels from coal.